

REMARKS

In the last Office Action, claims 2 and 3 were rejected under 35 U.S.C. §112, second paragraph. The Examiner pointed to various informalities in the claims. Claims 1-12 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,844,544 to Kahn et al. ("Kahn"). The Examiner stated that Khan discloses all elements of the claimed invention, including character group display means, first and second direction indication input means, character group selection means, and character selection display means.

By the present response, the specification has been amended in editorial respects to correct minor informalities and improve the wording. Claims 1-12 have been canceled without prejudice or admission and replaced by new claims 13-30, which are revised versions of the original claims rewritten in formal respects to improve the wording and overcome the informalities noted by the Examiner.

Applicants respectfully submit that claims 13-30 patentably distinguish over the prior art of record.

The present invention relates to an information processing device, such as a portable computer or telephone, or a wrist-wearable computing device, which displays character keys for character input on a display screen so that data input may be achieved without use of a keyboard or keypad.

Conventional keyboards cannot be efficiently incorporated into small portable computing devices, such as palmtop computers, telephones and wrist-wearable computing devices. As such devices have become smaller and lighter, character input and data transmission functions have become more common. However, an efficient mechanism for data input has remained elusive. There is a need for an efficient character input device for portable computing devices.

For instance, the keypad of a portable telephone is typically used for data entry. However, the use of a keypad having 10 keys for data entry cannot be usefully incorporated, for instance, into a wrist-wearable computing device. Moreover, the 10-key keypad requires the user to search for which key corresponds to a desired character, and results in an inconvenient need to press a key a large number of times when the wrong entry is made. These problems are even more pronounced when the keypad is used for inputting numerals or other symbols.

In accordance with one aspect of the present invention, the foregoing problems are overcome by providing an information processing device in which character input can be achieved without use of a keyboard. As recited by newly added independent claim 13, the inventive device has a display unit having a character display section for displaying user-input

characters and a key display section for displaying a plurality of individually user-selectable data groups each containing one or more characters that may be input by a user for display on the character display section, and for displaying a cursor for indicating a selected data group and a selected character. A confirmation switch is provided for selecting a data group and a character indicated by the cursor, and a multi-directional manually operated switch is provided for causing the cursor to move in alternate directions relative to displayed data groups and characters.

In the functional embodiment illustrated by Fig. 4 of the application drawings, the device is configured as a portable computing device 101 having a character type changing unit 401, a character group display unit 402, a left-right direction indication input unit 402, a character group select unit 404, a memory section 405, an up-down direction indicating input unit 406, a character selection unit 407, a deciding unit 408 and a clear unit 409.

The character type changing unit 401 changes the type of displayed character types that may be selected each time a character type select key 107 is pressed and notifies the character group display unit 402 and the character group selection unit 404 of the selected character type. In the disclosed embodiment, for instance, the inventive device is

capable of displaying Japanese hiragana and katakana characters and the alphabet of other languages such as English, French, German, Russian, Korean and Arabic.

The character group display unit 402 displays character groups belonging to the selected character type that are stored in the memory section 405. For example, in the case of hiragana, the character groups are each a plurality of the characters from the 50 character Japanese syllabary. In the case of English, the character groups may be the same as those used in the conventional telephone keypad, i.e., "abc", "def", "ghi", ... A cursor 105 is displayed at the position of a selected character group such that characters within that group are displayed in a highlighted matter. A plurality of character groups and characters are stored in advance in the memory section 405.

The character group selection unit 404 moves the cursor 105 in response to operation of a switch in left and right or up and down directions in accordance with the left-right direction indication input unit 403 and up-down direction indicating input unit 406, selects one of the displayed character groups and notifies the character group display unit 402 and the character selection unit 407 of the selected character group. In the illustrated embodiment, the left-right direction indication input unit 403 and the up-down

direction indicating input unit 406 are implemented by the four-way controller 106 shown in Fig. 1.

In response to the selection of a character group, the character selection unit 407 selects one character belonging to that character group, and notifies the character group display unit 402 and the deciding unit 408 of the selected character. When a decide key (a key in the center of the four-way controller 106 of Fig. 1) is pressed, the deciding unit 408 selects a character displayed inside the cursor 105 as an input character and displays the selected characters on the input character display unit 103 shown in Fig. 1.

The above-described embodiment provides a character group display unit 402 for displaying a plurality of character groups at the same time, a left-right direction indication input unit 403 for inputting left and right direction indication, an up-down direction indication input unit 406 for inputting up and down direction indication, a character group selection unit for moving a selected position in response to left and right direction indication input using the left-right direction indication input means and selecting one of the character groups displayed on the character group display unit 402, and a character selection unit 407 for sequentially selecting and displaying one of the characters included in the

character group selected by the character group selection unit. Accordingly, it is not necessary to provide a keypad having a large number of keys corresponding to each character group, it is not necessary to find which key corresponds to a desired character, and it is not necessary to press keys many times to correct for the occurrence of an erroneously pressed key. The inventive device and method can therefore be used to produce a miniaturize device and simplified character input procedure.

No corresponding structure or method is disclosed or suggested by the prior art of record.

Kahn discloses an eye-controlled apparatus for character input which displays symbols and letters and determines a user's selection by monitoring the position of the user's eye to determine which of the characters is being observed. In accordance with Kahn, the entire set of characters are divided into three sets, designated as lower case, upper case and command case. In order to select a particular character, the user first selects the case and then selects the character. Only one set need be displayed to the user at any given time since the characters in the other sets have spatial correspondence with those in displayed set. The system also displays the characters in groups and defines position selection fields corresponding to the positions of

the characters in each group. The user determines the position of the desired character in its group and makes a character selection by first selecting the corresponding position field. The apparatus then limits subsequent character selection by the user to the subset of characters in the corresponding positions in their groups. Limitation to the subset allows subsequent detection of the selected character to use a larger area than that occupied by the character in the display.

Newly added claims 13-30 are not anticipated by Kahn. The factual determination of anticipation requires the disclosure, by a single reference, of every element of the claimed invention. In re Spada, 15 USPQ2d 1655 (Fed. Cir. 1990); In re Bond, 15 USPQ2d 1566 (Fed. Cir. 1990).

Moreover, it is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference. Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).

The amended independent claims require operation of a multi-directional manually operated switch to scroll among a plurality of displayed character groups. Once a particular character group is selected, the characters contained in that group are displayed. The multi-directional switch is then

used to scroll among the displayed characters and one is then selected and displayed. In this manner, the inventive device and method solves the problems associated with the conventional use of a keyboard for character entry. Although the present invention avoids the need for a keyboard, it is not inconsistent with use of a keyboard.

There are significant conceptual distinctions between the claimed invention and the Kahn patent. Kahn presupposes that the operator cannot or chooses not to use a keyboard and provides an eye position controlled character input device. As noted above, the claimed invention requires use of a manually operated switch for scrolling among plural displayed character groups and characters. Kahn omits disclosure. Indeed, the incorporation of a manually-operated switch in Kahn would render the Kahn device useless for its intended purpose.

Furthermore, as can be seen from the discussion of Kahn provided above, the different character groups of Kahn are not simultaneously displayed as in the present invention.

Accordingly, Kahn does not anticipate or render obvious any of newly added claims 13-30.

In view of the foregoing amendments and discussion, the application is believed to be in condition for allowance.

Accordingly, favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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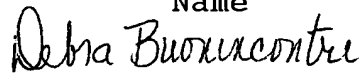
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